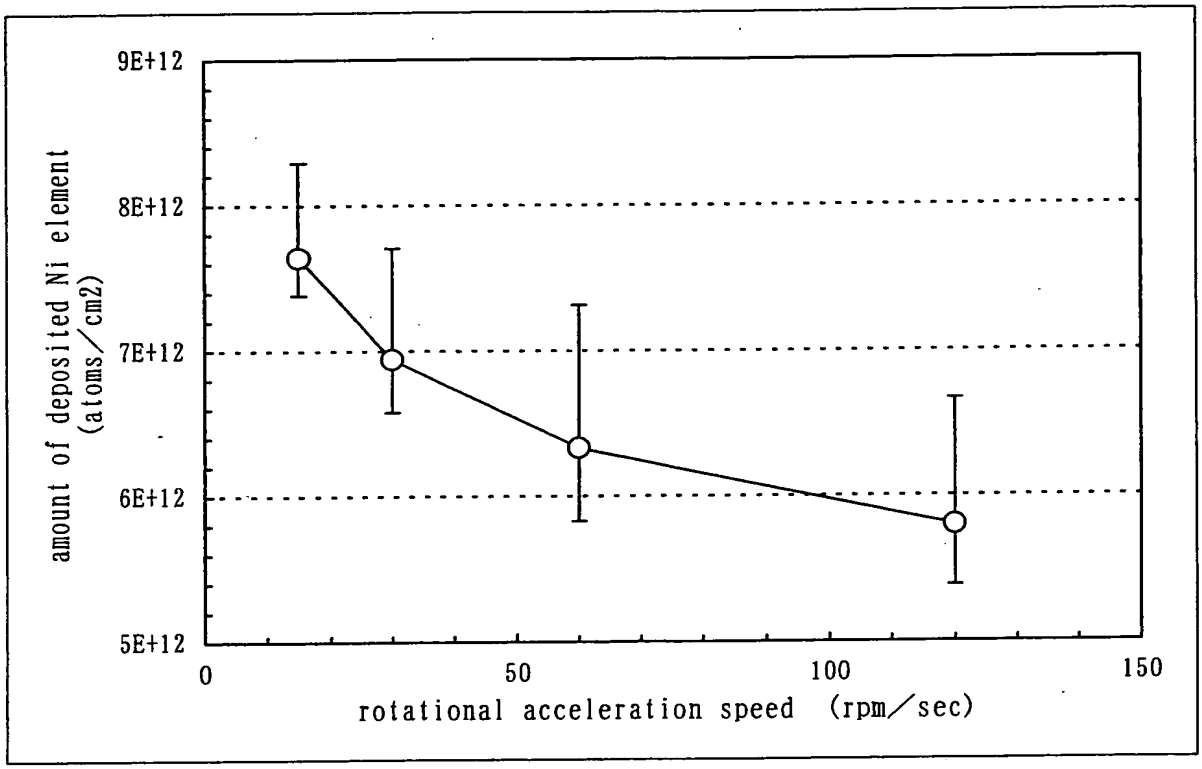
FIG. 1


9E+12
8E+12
7E+12
6E+12
5E+12
amount of deposited Ni element (atoms/cm2)
0
50
100
150
rotational acceleration speed (rpm/sec)

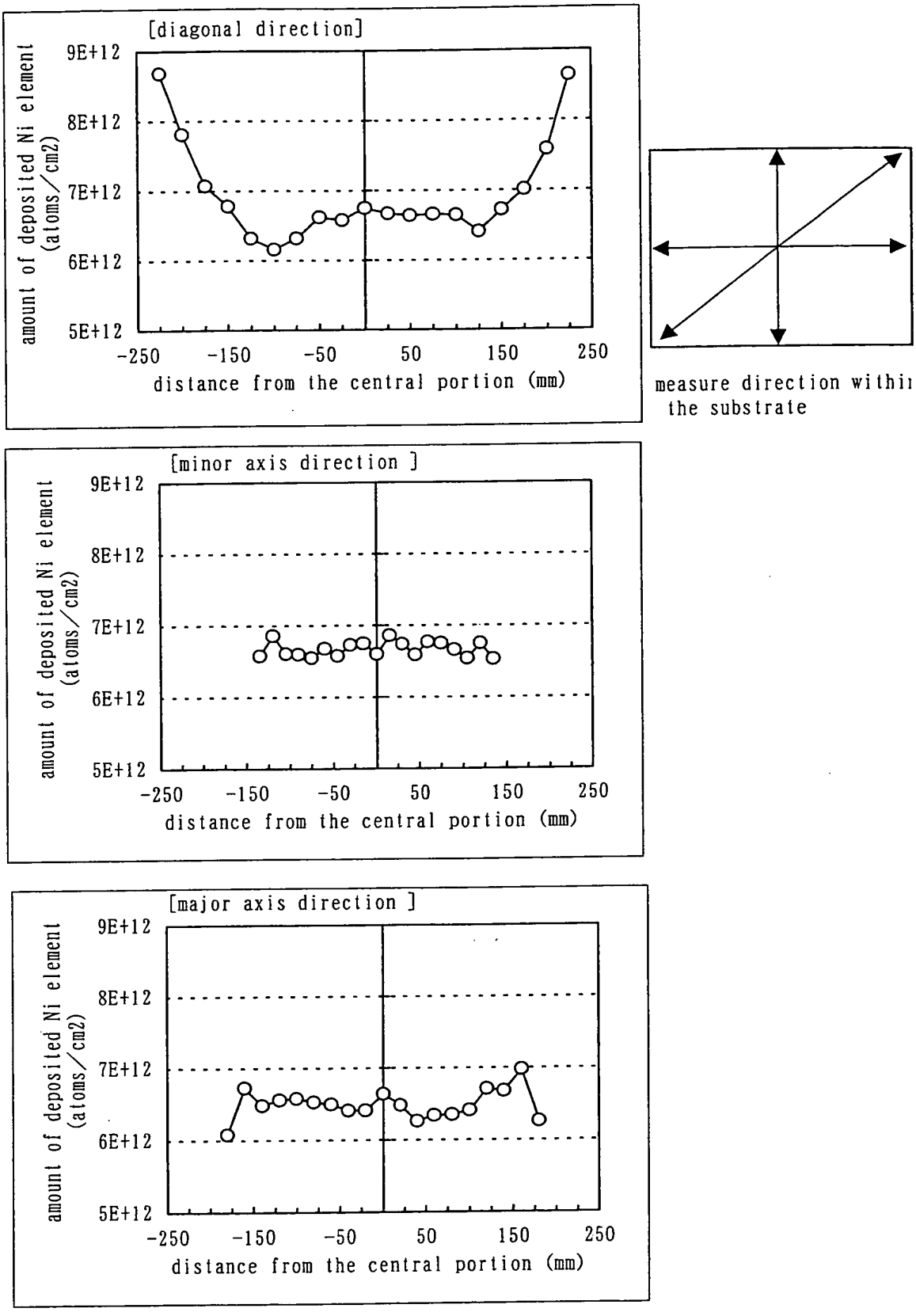
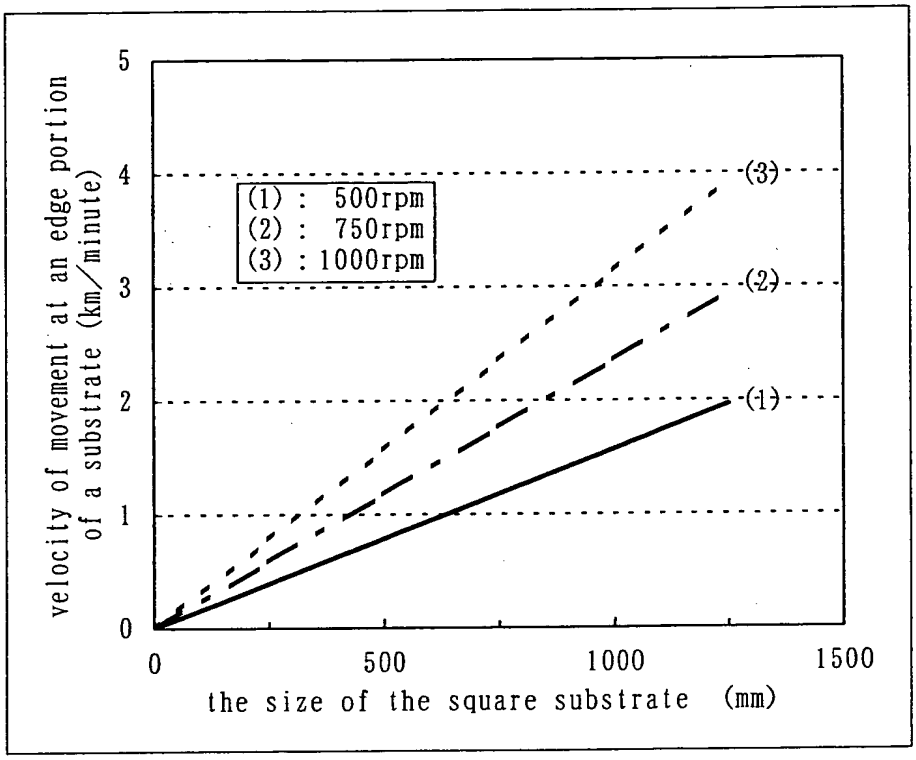
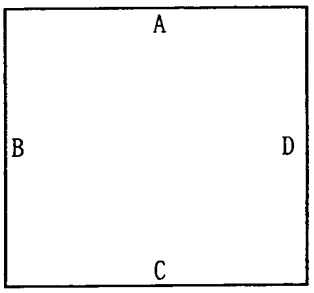

[diagonal direction]
amount of deposited Ni element (atoms/cm2)
9E+12
8E+12
7E+12
6E+12
5E+12
-250
-150
-50
50
150
250
distance from the central portion (mm)
measure direction within the substrate
[minor axis direction]
amount of deposited Ni element (atoms/cm2)
9E+12
8E+12
7E+12
6E+12
5E+12
-250
-150
-50
50
150
250
distance from the central portion (mm)
[major axis direction]
amount of deposited Ni element (atoms/cm2)
9E+12
8E+12
7E+12
6E+12
5E+12
-250
-150
-50
50
150
250
distance from the central portion (mm)

FIG. 2

FIG. 3





Edge portions of the substrate correspond to A-D in the square substrate.

FIG. 4

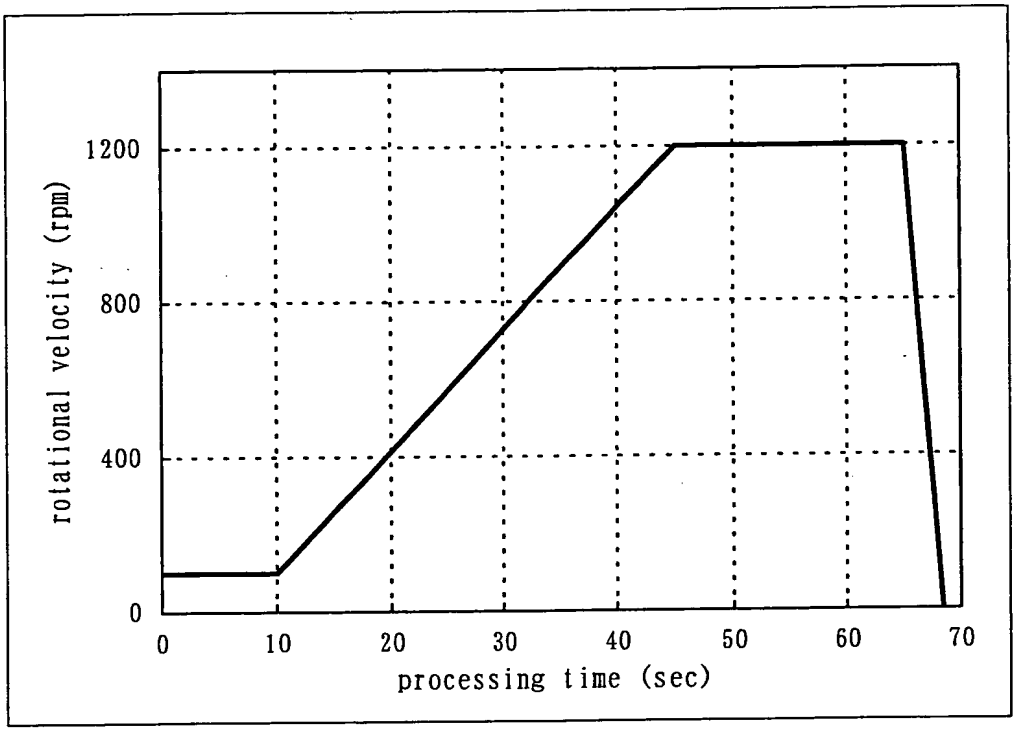
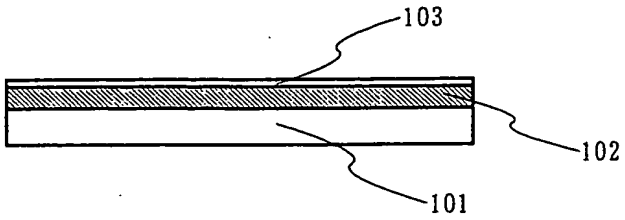

rotational velocity (rpm)
1200
800
400
0
0
10
20
30
40
50
60
70
processing time (sec)

FIG. 5A

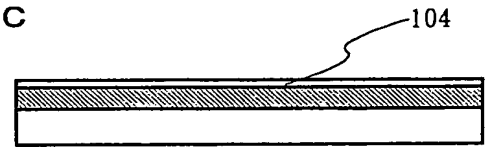


DEPOSITION OF AMORPHOUS SILICON FILM

FIG. 5B

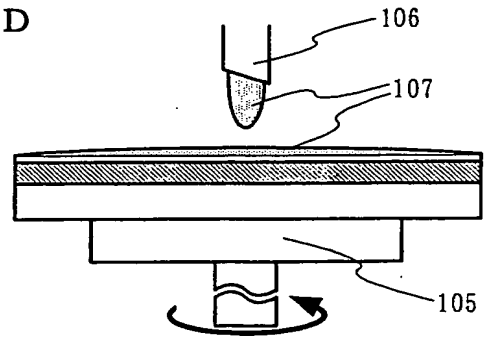
REMOVAL OF NATURAL OXIDE FILM BY DILUTE HYDROFLUORIC ACID PROCESSING

FIG. 5C



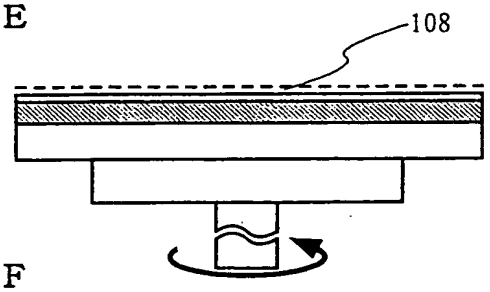
FORMATION OF EXTREMELY THIN SILICON OXIDE FILM BY AQUEOUS OZONE PROCESSING

FIG. 5D



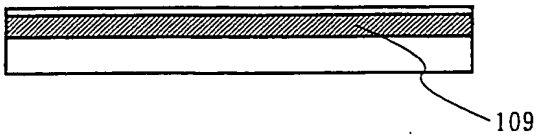
ADDITION OF AQUEOUS Ni ELEMENT SOLUTION BY SPIN ADDITION METHOD SPIN ADDITION IN LOW VELOCITY SPIN STATE OF 100 RPM

FIG. 5E



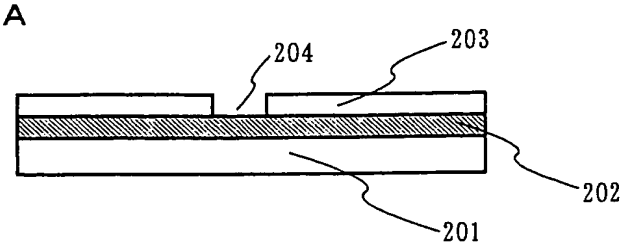
FORMATION OF NiCONTAINING LAYER BY SPIN DRYING ACCELERATION TO 1200 RPM AT LOW ACCELERATION OF 30 RPM/SEC SPIN DRYING FOR 20 SEC AT 1200 RPM

FIG. 5F



CRYSTALLIZATION OF AMORPHOUS SILICON FILM BY HEAT TREATMENT (VERTICAL GROWTH METHOD)

FIG. 6A

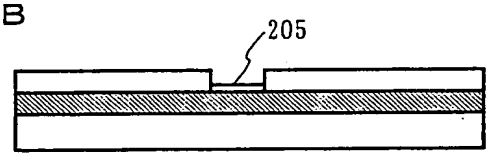


DEPOSITION OF AMORPHOUS SILICON FILM

DEPOSITION OF MASK INSULATING FILM

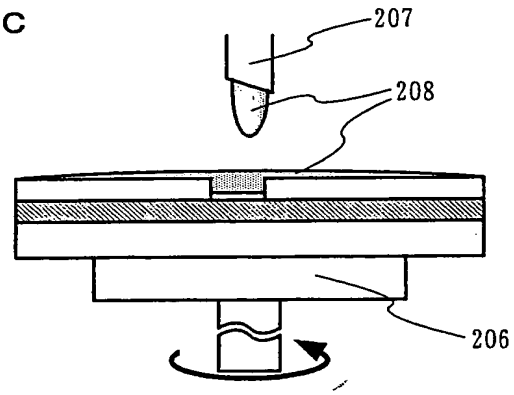
FORMATION OF OPENING REGION

FIG. 6B



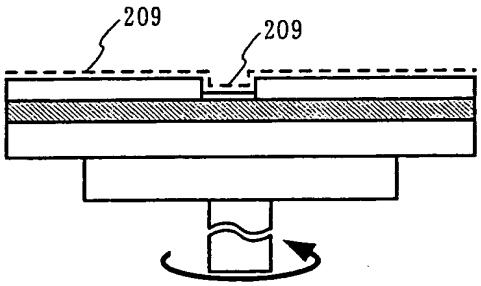
FORMATION OF EXTREMELY THIN SILICON OXIDE FILM IN OPENING REGION

FIG. 6C



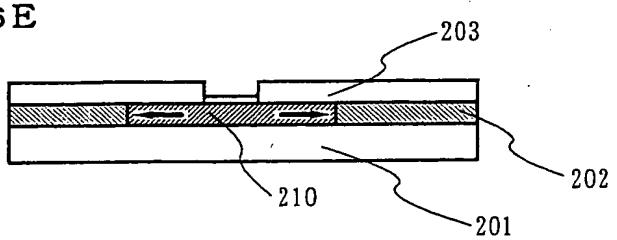
ADDITION OF AQUEOUS Ni ELEMENT SOLUTION BY SPIN ADDITION METHOD SPIN ADDITION IN LOW VELOCITY SPIN STATE OF 100 RPM

FIG. 6D



FORMATION OF NiCONTAINING LAYER BY SPIN DRYING ACCELERATION TO 1200 RPM AT LOW ACCELERATION OF 30 RPM/SEC SPIN DRYING FOR 20 SEC AT 1200 RPM

FIG. 6E



CRYSTALLIZATION OF AMORPHOUS SILICON FILM BY HEAT TREATMENT (HORIZONTAL GROWTH METHOD)

FIG. 7A DEPOSITION OF AMORPHOUS SILICON FILM/PREPROCESS/ADDITION OF NI ELEMENT SOLUTION ADDITION OF NI ELEMENT SOLUTION

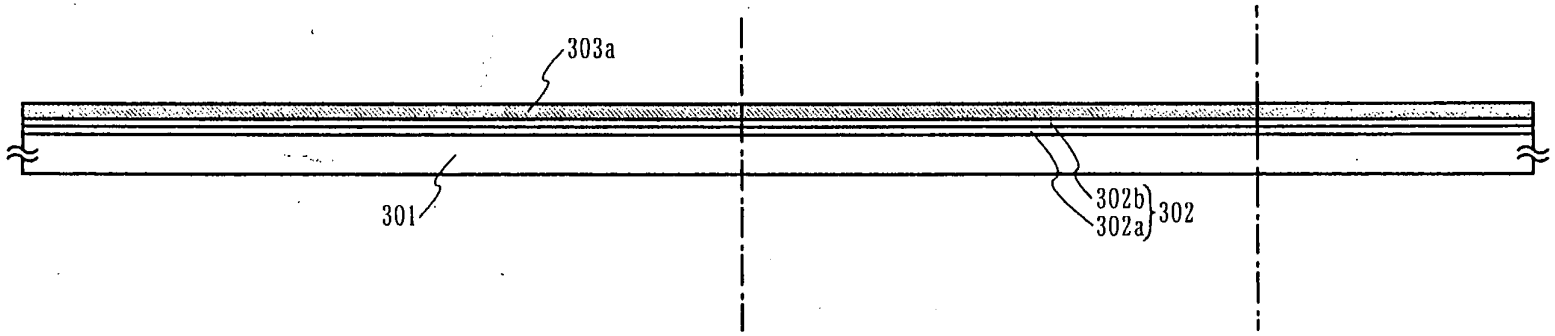


FIG. 7B DEHYDROGENATION/ TERMAL CRYSTALLIZATION(HEAT TREATMENT/IN THE ELECTROTHERMAL FURNACE+LASER IRRADIATION TREATMENT)

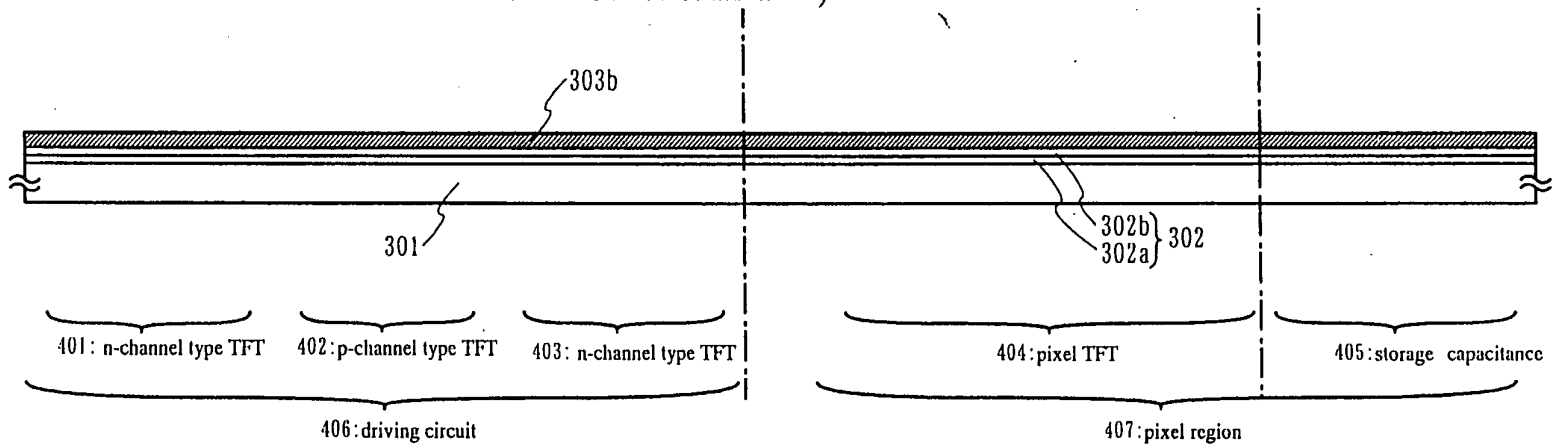


FIG. 8A FORMATION OF SEMICONDUCTOR FILMS

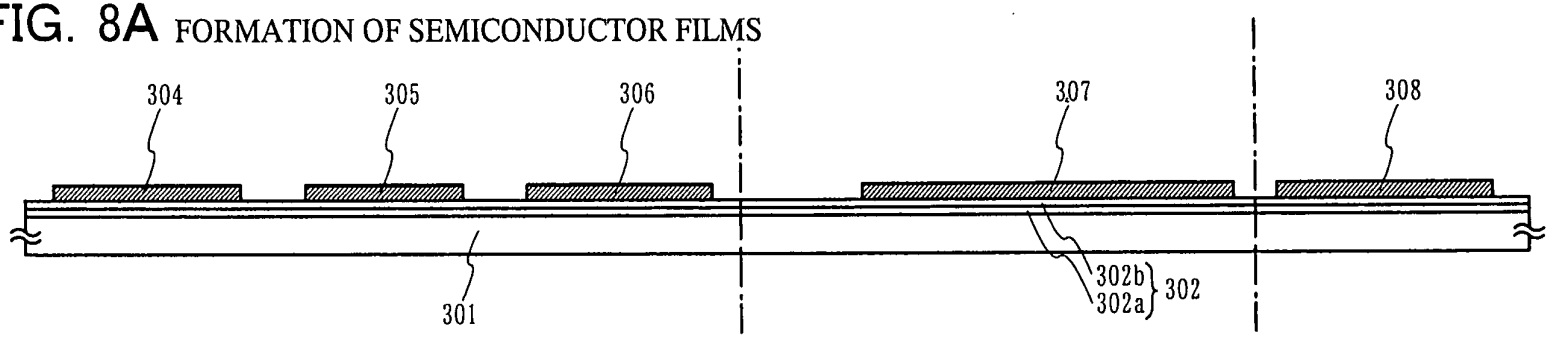


FIG. 8B DEPOSITING THE GATE INSULATING FILM/DEPOSITING THE GATE ELECTRODE

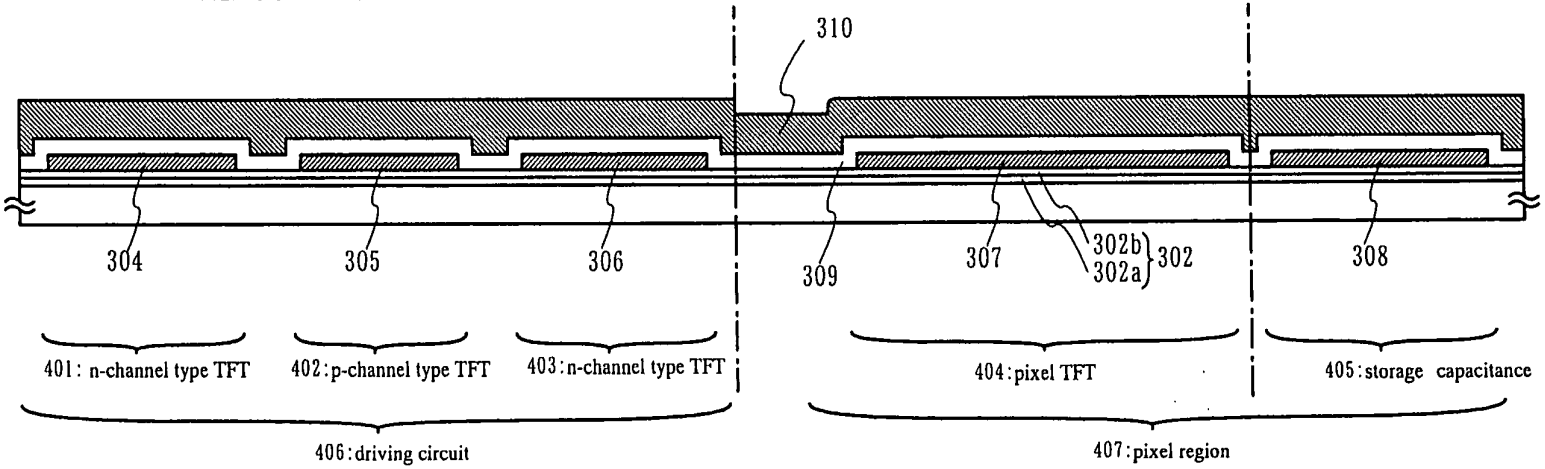


FIG. 9A FORMATION OF RESIST PATTERNS FOR GATE ELECTRODES/DRY ETCHING/FIRST ION DOPING PROCESS(FORMATION OF N- REGIONS)

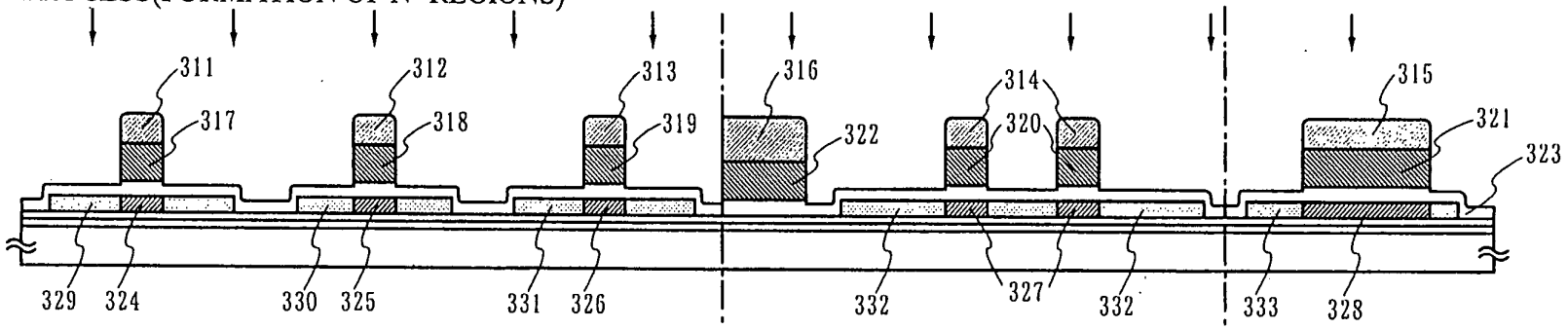


FIG. 9B REMOVAL OF MASKS/FORMATION OF RESIST PATTERNS FOR N+ REGIONS/ SECOND ION DOPING (FORMATION OF N+ REGIONS)

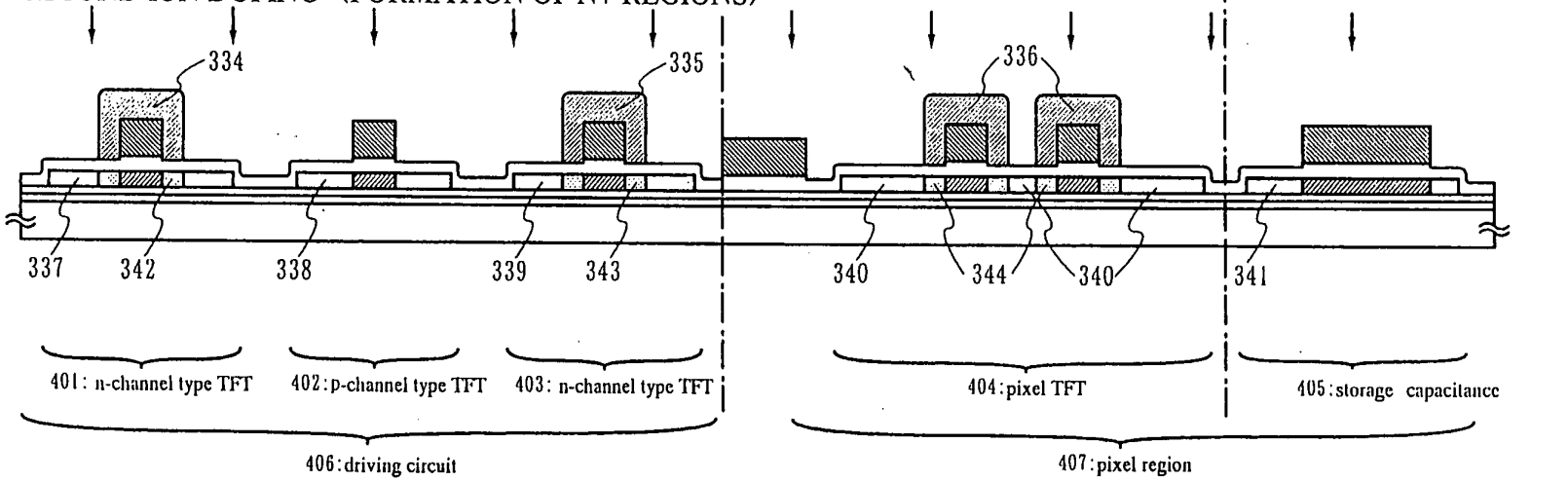


FIG. 10A REMOVAL OF MASKS(FORMATION OF RESIST PATTERNS FOR for P+ REGIONS/THIRD ION DOPING/ FORMATION OF P + REGIONS)

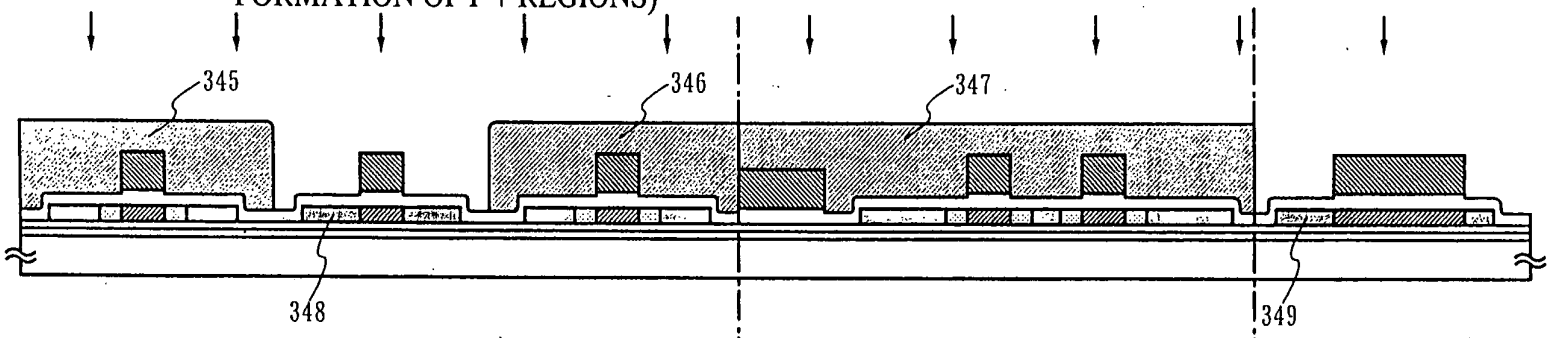


FIG. 10B REMOVAL OF RESIST/DEPOSITION OF FIRST INTERLAYER INSULATING FILM/THERMAL ACTIVATION

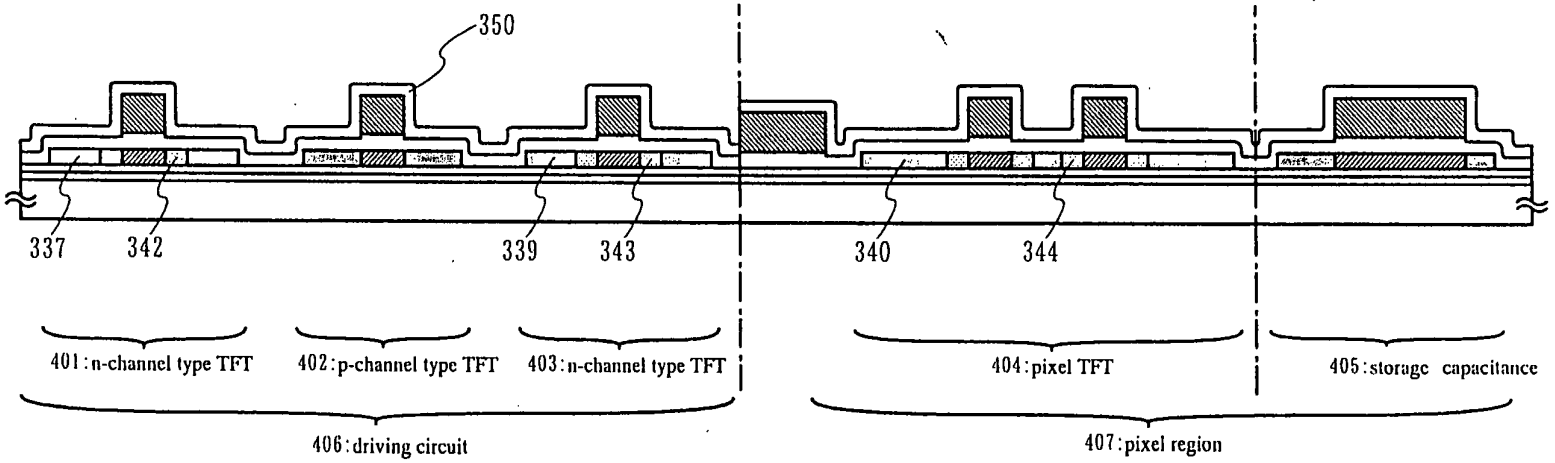


FIG. 11A DEPOSITION OF THE SECOND INTERLAYER INSULATING FILM /FORMATION OF CONTACT HOLES

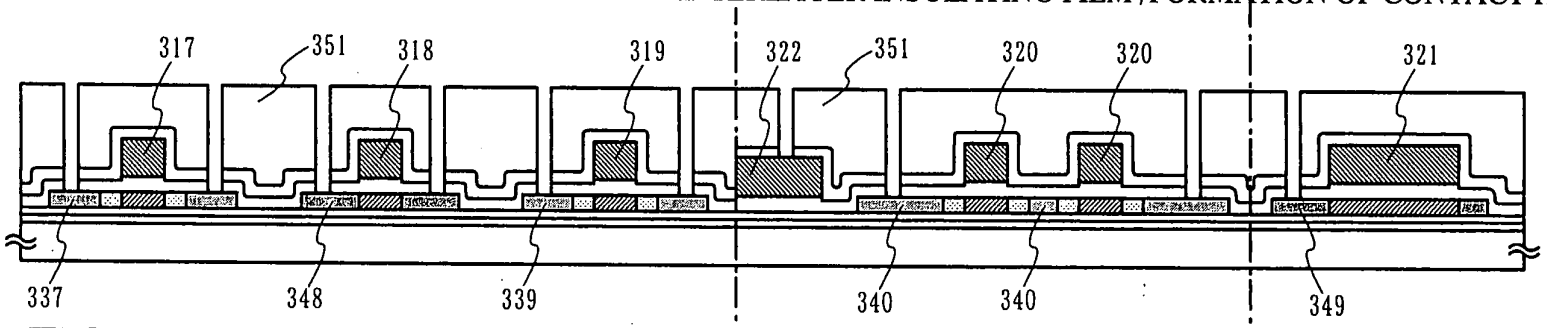
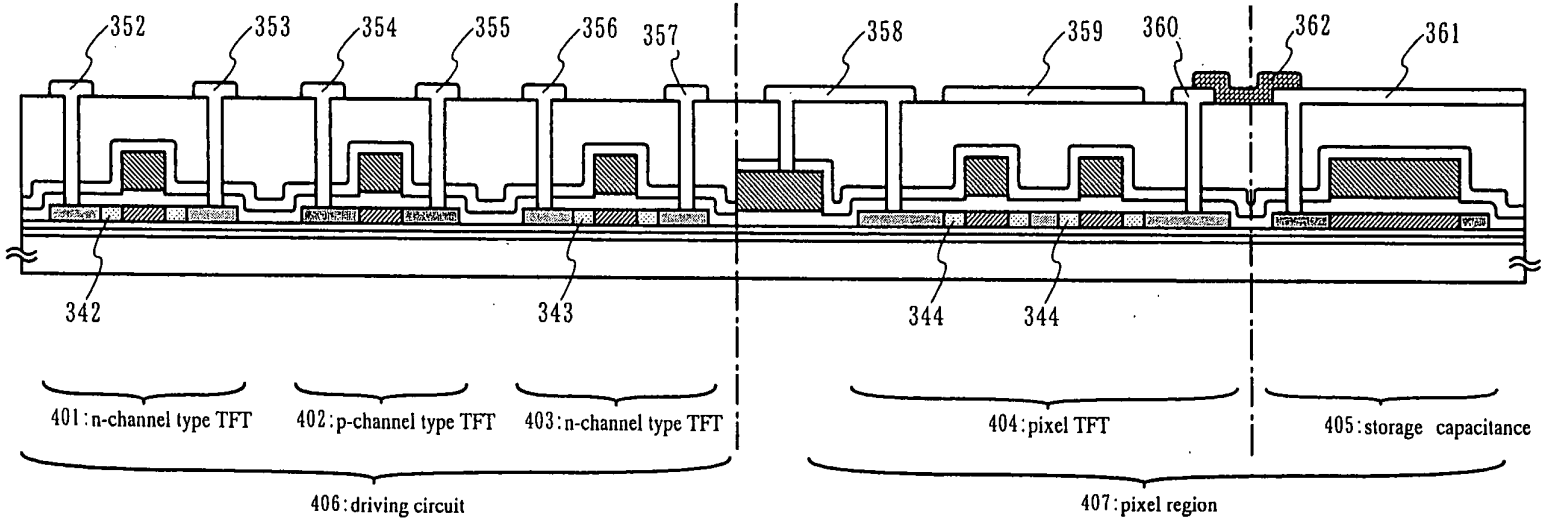


FIG. 11B FORMATION OF METAL WIRINGS /FORMATION OF TRANSPARENT CONDUCTIVE FILM



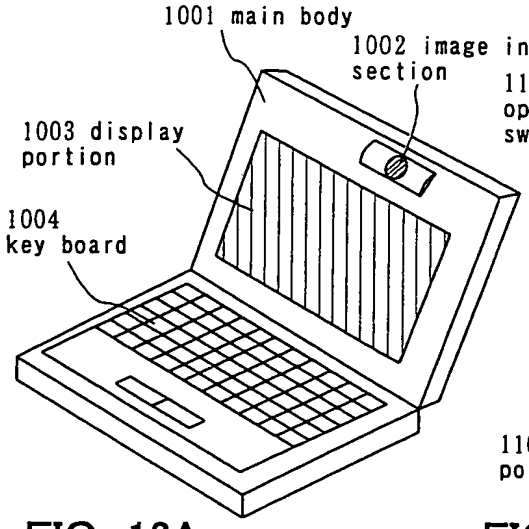


FIG. 12A

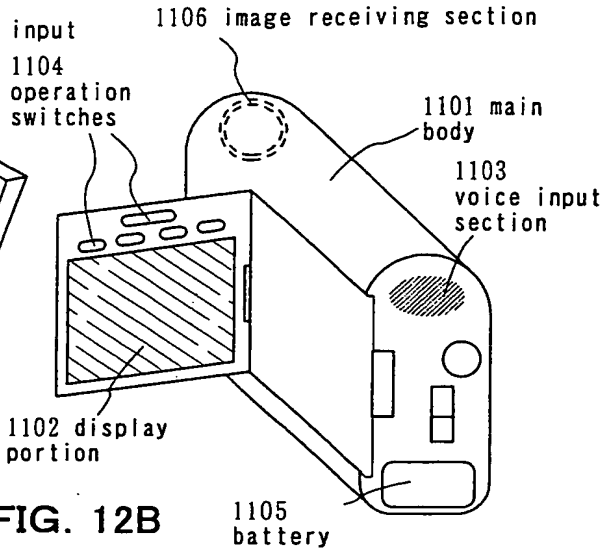


FIG. 12B

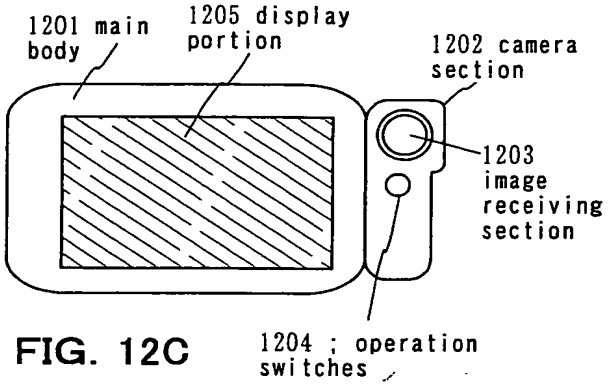


FIG. 12C

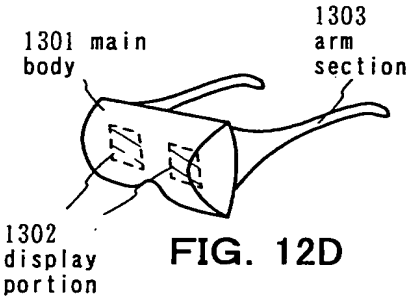


FIG. 12D

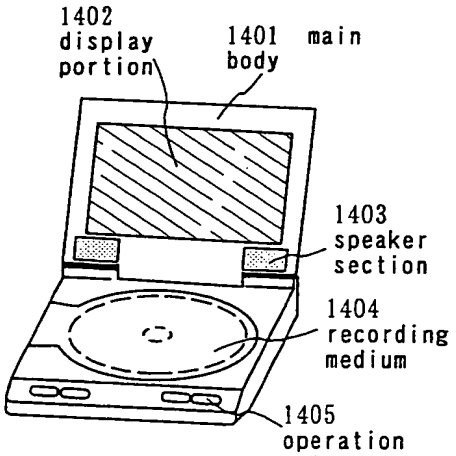


FIG. 12E

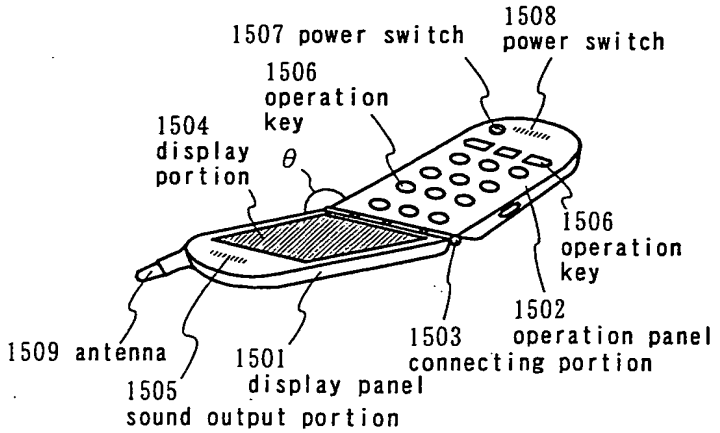


FIG. 12F

FIG. 13A

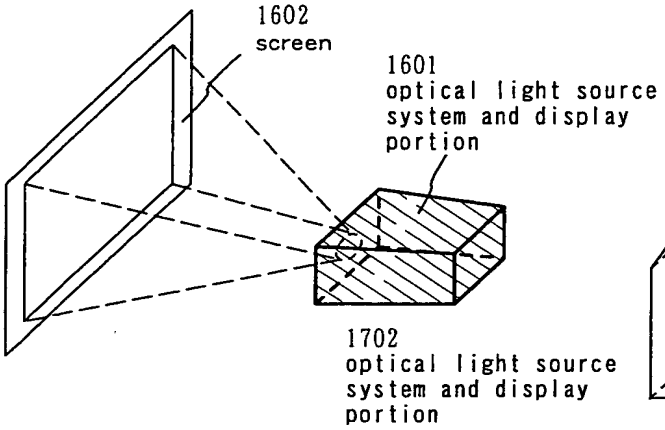


FIG. 13B

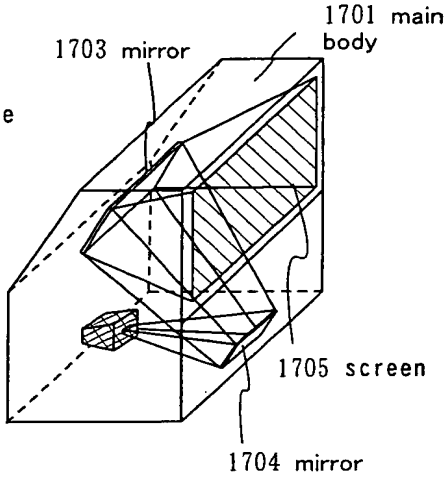


FIG. 13C

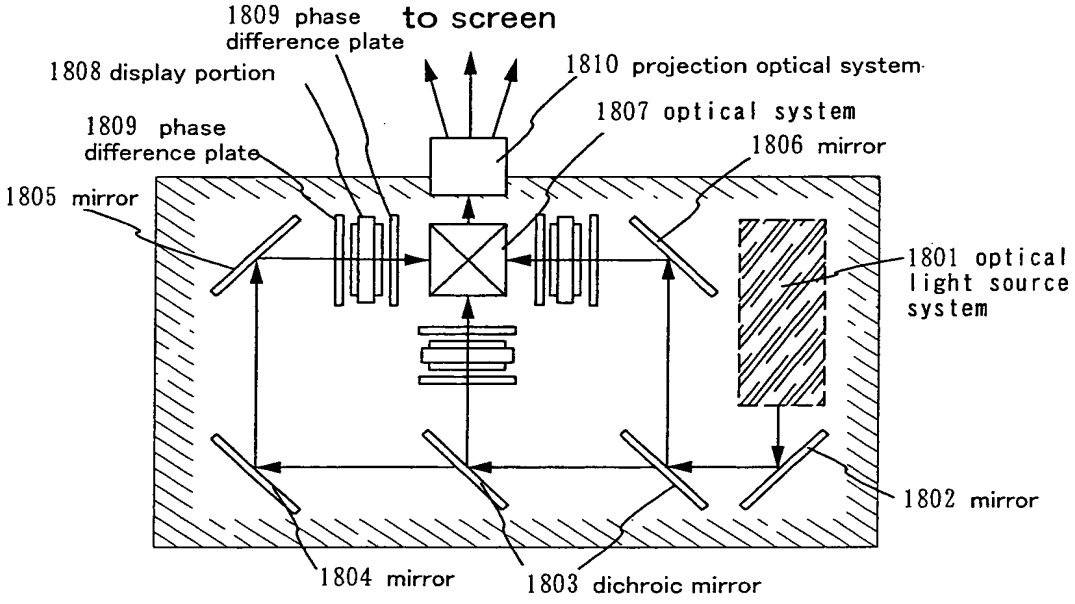


FIG. 13D

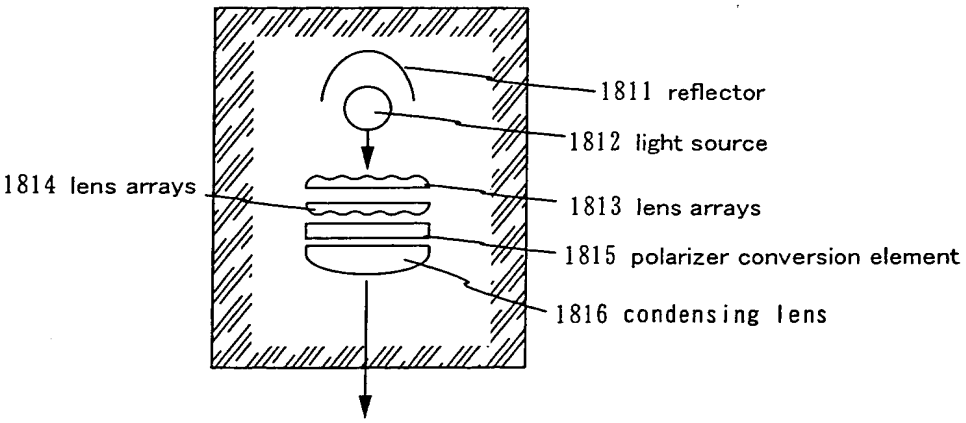


FIG. 14A

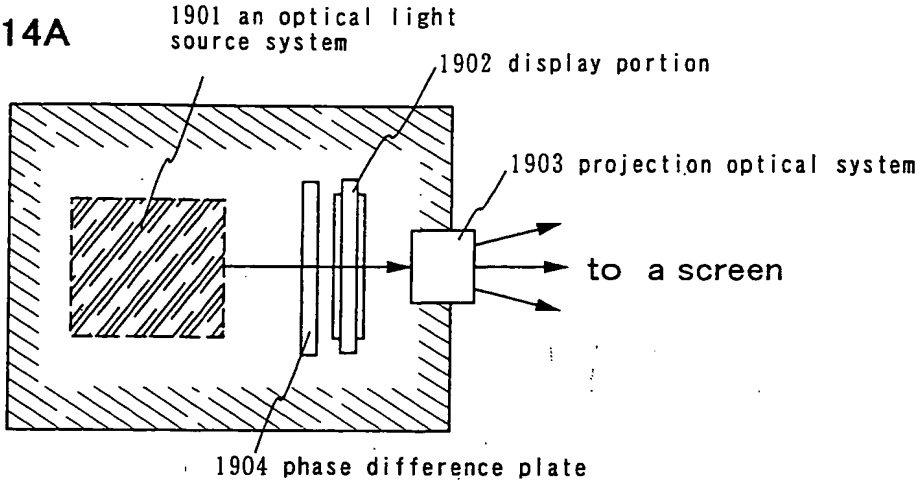


FIG. 14B

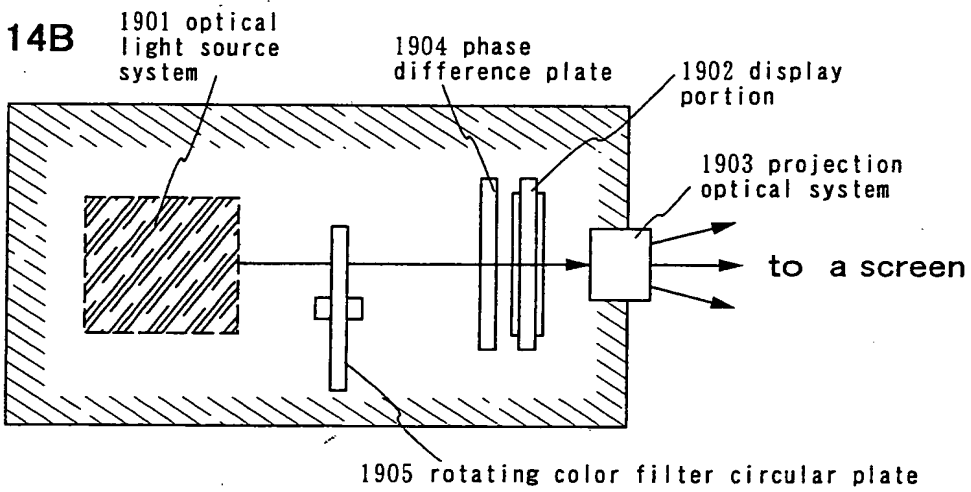


FIG. 14C

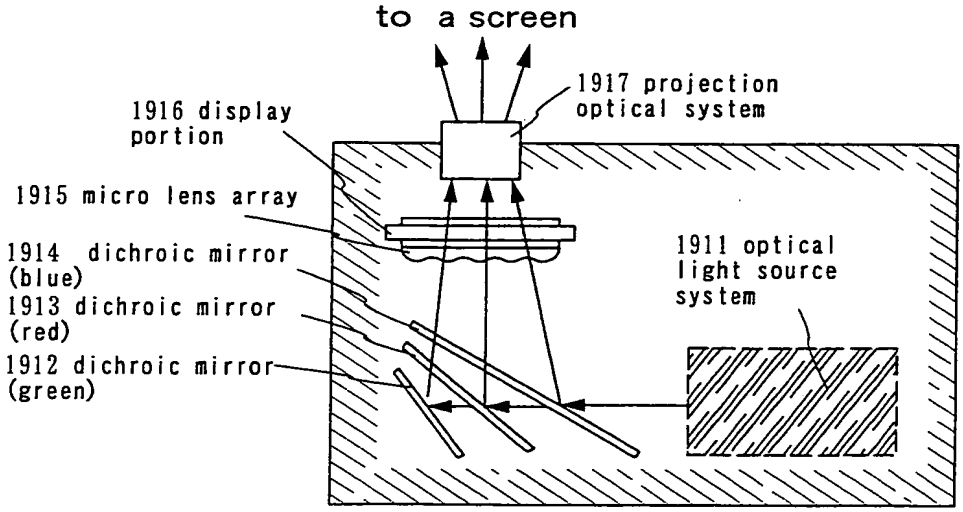


FIG. 15

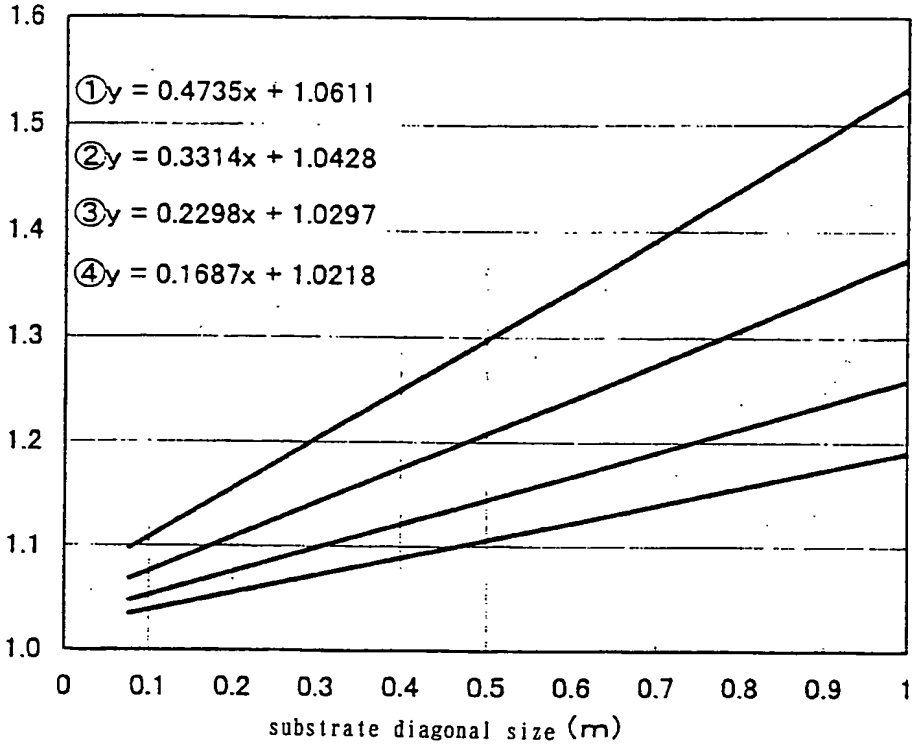
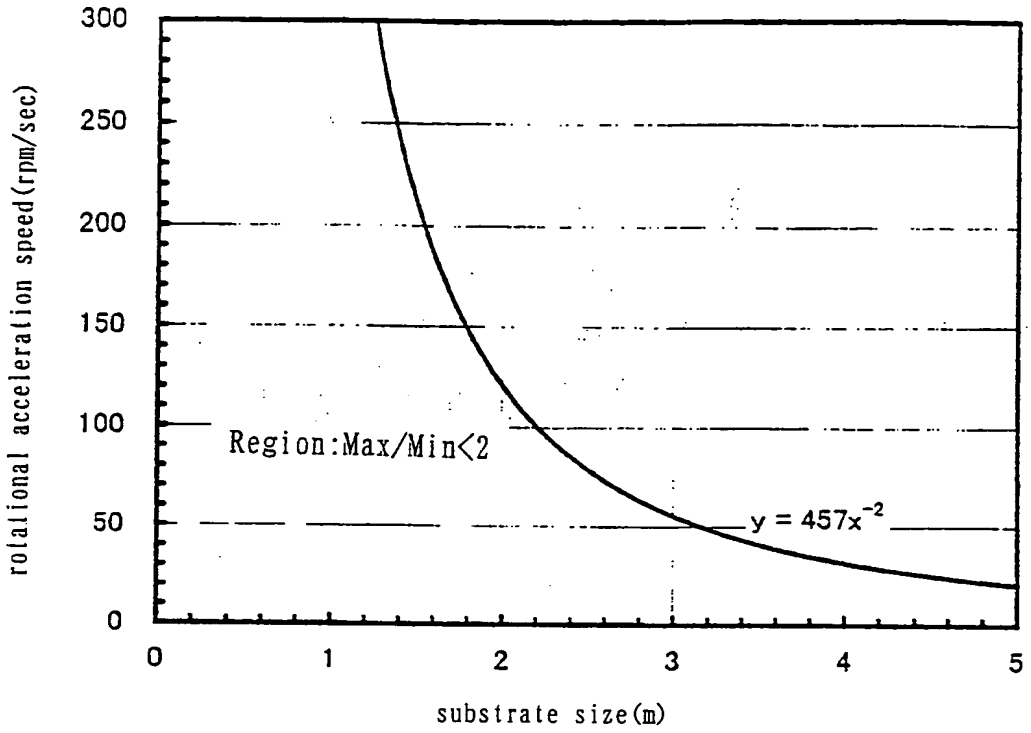

Ni concentration ratio between a center portion of the substrate and an edge portion of the substrate, with the concentration at the center portion as one
①y = 0.4735x + 1.0611
②y = 0.3314x + 1.0428
③y = 0.2298x + 1.0297
④y = 0.1687x + 1.0218
1.6
1.5
1.4
1.3
1.2
1.1
1.0
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
substrate diagonal size (m)

FIG. 16



the relationship between substrate size and rotational acceleration speed.